Claims:

1. A method for producing GPS corrections, comprising:
   a. collecting measurements from a plurality of GPS reference stations;
   b. determining network corrections from the measurements;
   c. determining residual errors at one or more of the reference stations located within a vernier-cell region; and
   d. preparing vernier-cell corrections to compensate residual errors within the vernier-cell region.

2. The method of claim 1, wherein determining network corrections comprises estimating errors in satellite ephemerides and clock polynomials broadcast by GPS satellites.

3. The method of claim 1, further comprising the transmitting the network corrections and vernier-cell corrections for use by a mobile GPS receiver unit.

4. The method of claim 3, further comprising receiving the network corrections and vernier-cell corrections at a mobile GPS receiver unit and converting the network corrections and vernier-cell corrections to a set of corrections appropriate for a declared location.

5. The method of claim 4, wherein the declared location is one of: a location of the mobile GPS receiver unit determined at the mobile GPS receiver unit, a location supplied by user input, and a fixed location.

6. A method for producing GPS corrections, comprising:

a. a step for collecting measurements from a plurality of GPS reference stations;

b. a step for determining network corrections from the measurements;

c. a step for determining residual errors at one or more of the reference stations located within a vernier-cell region; and

d. a step for preparing vernier-cell corrections to compensate residual errors within the vernier-cell region.

7. Apparatus for producing GPS corrections, comprising:

a. means for collecting measurements from a plurality of GPS reference stations;

b. means for determining network corrections from the measurements;

c. means for determining residual errors at one or more of the reference stations located within a vernier-cell region; and

d. means for preparing vernier-cell corrections to compensate residual errors within the vernier-cell region.

8. System for producing GPS corrections, comprising:

a. a plurality of reference stations for producing measurements, the reference stations defining a network and at least some of the reference stations located within a vernier-cell region comprising a vernier cell; and

b. a network processor for processing the measurements to produce corrections by determining network corrections from the measurements, determining residual errors at one or more of the reference stations comprising a vernier cell, and preparing vernier-cell corrections to compensate the residual errors within a vernier-cell region.

9. The system of claim 9, further comprising a distribution subsystem to distribute the corrections for use by a mobile unit.

10. System for generating GPS corrections comprising:

a. at least one data collection hub for collecting measurements from a plurality of reference stations;

b. at least one network processor for processing the measurements to produce corrections by determining network corrections from the measurements, determining residual errors at one or more of the reference stations comprising a vernier cell, and preparing vernier-cell corrections to compensate the residual errors within a vernier-cell region; and

c. a distribution system for distributing the corrections for use by mobile units.

11. The system of claim 10, wherein the reference stations are organized in a plurality of regional subnets, the reference stations of each regional subnet having a set of common-visibility GPS satellites, and the regional subnets overlapping such that each adjacent pair of regional subnets includes at least one reference station in common.

12. The system of claim 11, wherein each regional subnet has a respective data collection hub.

13. The system of claim 11, wherein each regional subnet has a respective network processor.

14. The system of claim 13, wherein said at least one network processor comprises a wide-area network processor, and wherein the regional network processors receive correction data from the wide-area network processor.

15. The system of claim 10, wherein a plurality of reference stations is located within the vernier-cell region.

16. The system of claim 15, wherein geographical density of reference stations located within the vernier-cell region is greater than geographical density of reference stations located outside the vernier-cell region.

17. A network processor system for producing GPS corrections, comprising:

a. an input to receive measurements collected from a plurality of reference stations;

b. a processor to produce corrections by determining network corrections from the measurements, determining residual errors at one or more of the reference stations comprising a vernier cell, and preparing vernier-cell corrections to compensate the residual errors within a vernier-cell region; and

c. an output to supply the corrections for use by a mobile unit.

18. A network correction stream comprising network corrections derived from a plurality of network reference stations and residual error corrections derived from one or more vernier-cell reference stations.

19. Method of using a network correction stream in a navigator to produce corrected position fixes, comprising:

a. receiving network correction data derived from a plurality of network reference stations and residual error corrections derived from one or more vernier-cell reference stations

b. preparing from the network correction data a set of corrections suitable for a declared location.

20. The methods, apparatus and network correction data substantially as described and illustrated.